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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,957	06/18/2001	Rose Ramon Botella Mesa	229752001300	3466

7590 11/29/2007

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EXAMINER	
MARVICH, MARIA	
ART UNIT	PAPER NUMBER
1633	
MAIL DATE	DELIVERY MODE
11/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/763,957	BOTELLA MESA ET AL.	
	Examiner	Art Unit	
	Maria B. Marvich, PhD	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,7,9,11-15 and 19-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,7,9,11-15 and 19-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 April 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/26/07 has been entered.

Claims 1, 7, 9, 11-15 and 19-24 are pending.

Claim Objections

In claim 1 and 7, the recitation "a promoter which confers, activates or enhances expression" appears to intend a promoter that is capable of mediating expression. However, a promoter cannot "confer or activate or enhance expression", rather expression is the result of the induction from the sequences of SEQ ID NO:3. Hence the promoter --confers or enhances the ability of operably linked sequences to be expressed upon induction--.

As well in claim 1, the reciting in line 2 "comprising any one of" would be clearer and provide direct antecedent basis of recited as --wherein the promoter comprises any one of--.

Claim 15 is objected to because of the following informalities "comprising any one of" would be clearer and provide direct antecedent basis of recited as --wherein the at least one portion comprises any one of--. **These are new objections.**

Appropriate correction is required.

Response to Argument

Applicants' amendment filed 9/26/07 was adequate to overcome the objections to claims 11 and 19.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 22-24 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. **This is a new rejection.**

Claims 22-24 are vague and indefinite in that the metes and bounds of "the promoter directs expression" are unclear. It is unclear if the isolated nucleic acid that defines a promoter to the native promoter direct expression of SEQ ID NO:1 or SEQ ID NO:2 or a promoter hybridized that binds SEQ ID NO:1.

Claim Rejections - 35 USC § 112, first paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 7, 9, 11-15 and 19-24 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated nucleic acid sequence defining a

promoter wherein the sequence is SEQ ID NO:3 or a fragment comprising nucleotides 2016-2384, does not reasonably provide enablement for any other embodiment. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. **This rejection is maintained for reasons of record in the office action mailed 6/6/06 and 3/26/07. The rejection has been slightly reworded based upon applicants' amendment.**

1) Nature of invention. The invention is drawn to an isolated sequence that defines a promoter in which the promoter is said to direct expression of a gene encoding ACC synthase and is inducible in response to physical stimulation.

2) Scope of the invention. Applicants claim a genus of sequences that are nucleotide sequences that "define a promoter". Specifically, this genus comprises multiple sequences 1) **a sequence** of nucleotides as set forth in SEQ ID NO:3, 2) a functional fragment thereof, 3) a fragment comprising residues 2016 to 2384, 4) nucleotides with at least 90% identity to residues 2016-2384 of SEQ ID NO:3, 5) a sequence of nucleotides complement of these sequences or 6) a sequence of nucleotides that hybridize to 1-3 under stringency conditions of 0.1X SSC, 0.1% w/v SDS and 65°C. Applicants recite a broad genus of sequences that appear to be functionally defined by being capable in their native form to direct expression of a gene encoding ACC synthase and that is further inducible. While it is presumed that the fragment must be able to encode an inducible promoter that can direct expression of a gene encoding ACC synthase, the specification does not provide adequate description in the specification of the required structural aspects of the sequences to provide this function. The structural requirements are further confused by reciting the sequences in terms of 90% identity or isolated following hybridization

even at high stringency. Sequences with 90% identity have as many as 37 nucleotides altered. The fragment from 2016-2384 is functional as a whole as described by the specification and thus it is not known which 37 nucleotides can be altered without affecting activity. Hybridization detects those sequences that have stretches of DNA in common. The result of this reaction need not comprise a promoter or promoter related sequences. For example, a sequence lacking sequences essential for promoter function can result in a nucleic acid sequence that is almost 100% related sequentially to regions of SEQ ID NO: 3 but has no relationship functionally.

The unpredictability of identifying those sequences with the functional properties required of the instant promoter is great given the lack of identifiable structural characteristics, which is exacerbated by the language of the claims. First, by recitation of "**a sequence** of nucleotides" applicants recite an enormous number of fragments of SEQ ID NO:3 that must only comprise a dinucleotide. And recitation of a functional fragment does not indicate that functionality that is required of the fragment even should the original sequence be limited to the sequence of SEQ ID NO:3. Thirdly, 2016-2384 are not residues and do not encode residues. Rather, the sequence is that of a nucleic acid.

3) Number of working examples and guidance. Functionally, applicants disclose that sequences that "define a promoter" "confers, activates or enhances expression of a structural gene or other nucleic acid in a plant cell" (see page 16, paragraph 5). Structurally, applicants disclose the sequence of pGEL-1 (SEQ ID NO:3). pGEL-1 comprises the promoter from mung bean ACC synthase that directs expression of a protein encoded by a sequence with 100% identity to SEQ ID NO: 1. Primer pairs 4 and 5 are used to isolate the promoter from mung bean. To characterize the promoter, applicants generate a series of seven serial deletions of the

mung bean ACC synthase promoter region (page 36). A general decline in activity in the shorter promoters is detected in immature and mature leaf tissue but not evidently in any other tissues (page 37).

4) State of the art. The art does not disclose SEQ ID NO:3. Nor does the art or the specification teach the acc synthase promoter from mung bean or domains/ motifs required for promoter activity by the acc synthase promoter. Therefore, as neither domains nor structural motifs are available, the ability to identify

5) Unpredictability of the art. Applicants claim an isolated nucleic acid molecule that defines a promoter wherein the promoter in its native form directs expression of a gene encoding ACC synthase and is inducible in response to physical stimulation. However, applicants only disclose a single sequence that meets these functional limitations and that is SEQ ID NO:3. Even the steps of claim 9, which are designed to isolate a promoter from native DNA will isolate a sequence corresponding to SEQ ID NO:3. By reciting sequences with 90% homology to residues (nucleotides) 2016-2384 of SEQ ID NO:3 and by claiming sequences hybridizing under high stringency conditions, applicants recite a broad genus of promoters that can differ in any of 10% of the nucleotides of SEQ ID NO:3. In fact, 37 nucleotides can be altered in the functional fragment encompassing 2016-2384. Those nucleotides that can be altered cannot be surmised. As well, any nucleic acid that is isolated following hybridization at high stringency conditions requires only a small number of nucleic acids to match and the obtained nucleic acids may be very different from SEQ ID NO:3 such that the sequence obtained may actually encode a very different function. The relationship between the structure of the sequence and its function

becomes unclear by claiming sequences that are isolated by relationship to SEQ ID NO:3 or by hybridization.

By disclosing pGEL-1, the applicants have not reduced to practice the claimed invention. Applicants have not demonstrated a representative number of sequences that comprise relevant identifying characteristics, specific features or functional attributes that would distinguish different members of the claimed genus. In other words, a number of sequences fit into this broad genus of sequences that can potentially be isolated but the skilled artisan cannot envision the detailed structure of the broad class of sequences that are in their native form capable of directing expression of ACC synthase and are inducible given the lack of adequate description of structural requirements. Because applicants do not provide the structural requirements of the sequences of SEQ ID NO:3 that "confers, activates or enhances expression of a structural gene or other nucleic acid in a plant cell", deviation from the entire sequence of nucleotides of pGEL-1 that can perform the same function are not known. Nor can the sequences that cannot be altered or cannot be deviated from cannot be guessed. Isolation of a promoter from such sequences requires a detailed understanding of the structural requirements of the promoter. Applicants' disclosure has amounted to a statement that the protein is part of the invention and a reference to a potential method for isolating it, by sequence identity. It would require undue experimentation to identify those molecules that are 90% identical to SEQ ID NO:3 or that are isolated upon hybridization to SEQ ID NO:3 or homologs of SEQ ID NO:3. A person of ordinary skill in the art could not predict the operability of the species that would be isolated of sequences with at least 90% similarity or that hybridize to SEQ ID NO:3 under stringency conditions of 0.1X SSC, 0.1% w/v SDS at 465°C.

6) Amount of Experimentation Required. The specification provides a single reference sequences without identifying relevant characteristics or structural-functional relationships. Thus neither the specification nor the prior art teach the structural requirements of sequences with at least 90% similarity to SEQ ID NO:3 or residues 2016-2384 of SEQ ID NO:3 or a complement of these sequences or a sequence of nucleotides that hybridize to these sequences under stringency conditions of 2X SSC, 0.1% w/v SDS and 45°C that encodes a promoter. Given the large size and diversity of the recited sequences, the absence of disclosed or art recognized correlations between structure and function and the large number of potential sequences or homologs, it must be considered that any sequence with promoter activity in a plant cell must be empirically determined.

Response to Amendment-35 USC 112, first paragraph

Applicants traverse the claim rejections under 35 U.S.C 35 USC 112, first paragraph on page 6-7 of the amendment filed 9/26/07. Applicant's arguments filed 9/26/07 have been fully considered but they are not persuasive. The rejection is based upon consideration of the number of sequences that would be encompassed by a promoter with 90% sequence identity and that are identified following hybridization and the highly unpredictability nature of identifying those that are promoters. The court and the Board have repeatedly held (Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.,18 USPQ2d 1016 (CA FC, 1991); Fiers v. Revel, 25 USPQ2d 1601 (CA FC 1993); Fiddes v. Baird, 30 USPQ2d 1481 (BPAI 1993) and Regents of the Univ. Calif. v. Eli Lilly & Co., 43 USPQ2d 1398 (CA FC, 1997)) that an adequate written description of a nucleic acid requires more than a mere statement that it is part of the invention and reference to a

potential method for isolating it, irrespective of the complexity or simplicity of the method; what is required is a description of the nucleic acid itself. It is not sufficient to define DNA solely by its principal biological property, because disclosure of no more than that, as in the instant case, is simply a wish to know the identity of any DNA with that biological property. Naming a type of material generically known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material. When one is unable to envision the detailed constitution of a complex chemical compound having a particular function, such as a nucleic acid, so as to distinguish it from other materials, as well as a method for obtaining it, conception has not been achieved until reduction to practice has occurred, i.e., until after the nucleic acid has been isolated. Thus, claiming all DNA's that achieve a result without defining what means will do so is not in compliance with the description requirement. Rather, it is an attempt to preempt the future before it has arrived. Also, where a claim purports to cover all nucleic acids and the specification discloses but a single DNA known to do so, the situation is analogous to a single means claim and does not meet the enablement requirement under para. 1 of§112. The guidance in the specification does not detail 37 nucleotides that can be altered without altering function. Furthermore, the ability to determine a priori whether a variant can function in the recited invention is not a high art. Therefore, the ability to predict a priori which sequences that are identified following hybridization or that are related by 90% and will meet a particular goal must be considered to be poorly developed.

Conclusion

Claims 1, 7, 9, 11-15 and 19-24 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria B. Marvich, PhD whose telephone number is (571)-272-0774. The examiner can normally be reached on M-F (7:00-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach, PhD can be reached on (571)-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Maria B Marvich, PhD
Examiner
Art Unit 1633

/Maria Marvich/